

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT03116		FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/CN03/01153	International filing date (day/month/year) 31.DEC.2003 (31.12.03)	Priority date (day/month/year)	
International Patent Classification (IPC) or national classification and IPC SEE Supplemental Box			
Applicant WANG,Zhaolei, ETAL			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 31.DEC.2003 (31.12.03)		Date of completion of this report 22.APR.2006 (22.04.06)	
Name and mailing address of the IPEA/CN The State Intellectual Property Office, the P.R.China, 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451		Authorized officer WANG,Xiaoping Telephone No. 86-10-62085735	



## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/CN03/01153**Box No. I Basis of the report**1. With regard to the **language**, this report is based on:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_ as originally filed/furnished
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_ as originally filed/furnished
- pages \* \_\_\_\_\_ as amended (together with any statement) under Article 19
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_ as originally filed/furnished
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/CN03/01153

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement:

Novelty (N)

Claims 1-4

YES

Claims

NO

Inventive step (IS)

Claims 3-4

YES

Claims 1-2

NO

Industrial applicability (IA)

Claims 1-4

YES

Claims

NO

## 2. Citations and explanations (Rule 70.7)

### 1. The following document is cited in the communication:

D1: CN,Y,2516981

D2: JP,A,2002357648

### 2. The subject matters of claims 1-4 have novelty, thus meet the requirements of Article 33(2) PCT.

Not all the technical features of claim 1 to 4 which claim a method for measuring the operating state of a synchronous motor using composite power angle meter are disclosed by D1 or D2, thus claims 1 to 4 have novelty under Article 33(2) PCT.

### 3. The subject matters of claims 1-2 do not involve an inventive step, thus do not meet the requirements of Article 33(3) PCT.

3.1. D1 discloses a power angle measuring device for a synchronous motor (see fig.1, page 1, lines 10-24), it's composed of teeth, sensors, insulating amplifier, sampling holding and A/D converter, digital data processor, display, communication interface and keyboard; the teeth are installed on the rotating portion of the synchronous motor and the sensors are installed on the stationary portion of the synchronous motor. The teeth are rotated together with the rotator of the motor and a pulse signal of the teeth is generated in the sensors, and the signal is inputted together with terminal voltage signals of the synchronous motor and system voltage signals to the sampling holding and A/D converter, then is transferred into digital signal which is outputted to digital data processor. The teeth pulse signal is compared with the terminal voltage signal of the motor and with the system voltage signal to gain power angle difference by the digital data processor. The power angles relative to the terminal voltage of the motor and relative to the system voltage obtained are outputted to the display and the communication interface. Operating instruction and setting value are inputted to digital data processor by the keyboard, Real-time change of the phase angle of the synchronous motor under various fault states may be recorded and reflected. The independent claim 1 differs from D1 in that: By performing a calculation procedure, the coordinates of related points are obtained.

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

By using the coordinates of main points and the calculated results, the graphs of dynamic composite power angle and compound leakage magnetism in the motor's end which change along with the change in the motor's parameters are displayed by the processing of the image displaying program, and the alarm is realized. D2 discloses the following technical features (see figs. 1, 6, 7, column 3, lines 5-43): The power angle difference between the stator winding and the rotor pole of the synchronous motor which is changed along with load is determined, and the graph of composite vector power angle is displayed on the display 270, and the above features are also used to achieve the composite power angle graph of the synchronous motor, and the technical feature which is displaying the graph of compound leakage magnetism in the motor's end can be obtained on the basis of power angle graph by the common technical means; and the distinguishing feature which is realizing the alarm is common function in the art, thus they both belong to common knowledge in the art. From this, it's obvious for skilled person in the art to achieve the art scheme in claim 1 by combining D1 with D2 as well as common knowledge in the art. Hence, the subject matter of the independent claim 1 does not involve an inventive step.

3.2. D2 discloses the technical features of dependent claim 2 (see column 3, lines 5-43), hence the subject matter of claim 2 does not involve an inventive step.

4. Claims 3-4 have inventive step, thus meet the requirements of Article 33(3) PCT.

4.1. Claims 3 to 4 are not obvious to a person skilled on the basis of D1 or D2 or their combination, thus they have inventive step.

5. The claims 1-4 are industrially applicable, as they can be made or used in industry, thus meet the requirements of Article 33(4) PCT.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/CN03/01153

**Box No. VIII** Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. The expressing manner of " .....etc." is used in the claim 1, thus claim 1 is unclear, so claim 1 do not meet the requirements of Article 6 PCT.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/CN03/01153

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

International Patent Classification (IPC) or national classification and IPC

G01R 31/34 (2006.01) i

G01R 25/00 (2006.01) i